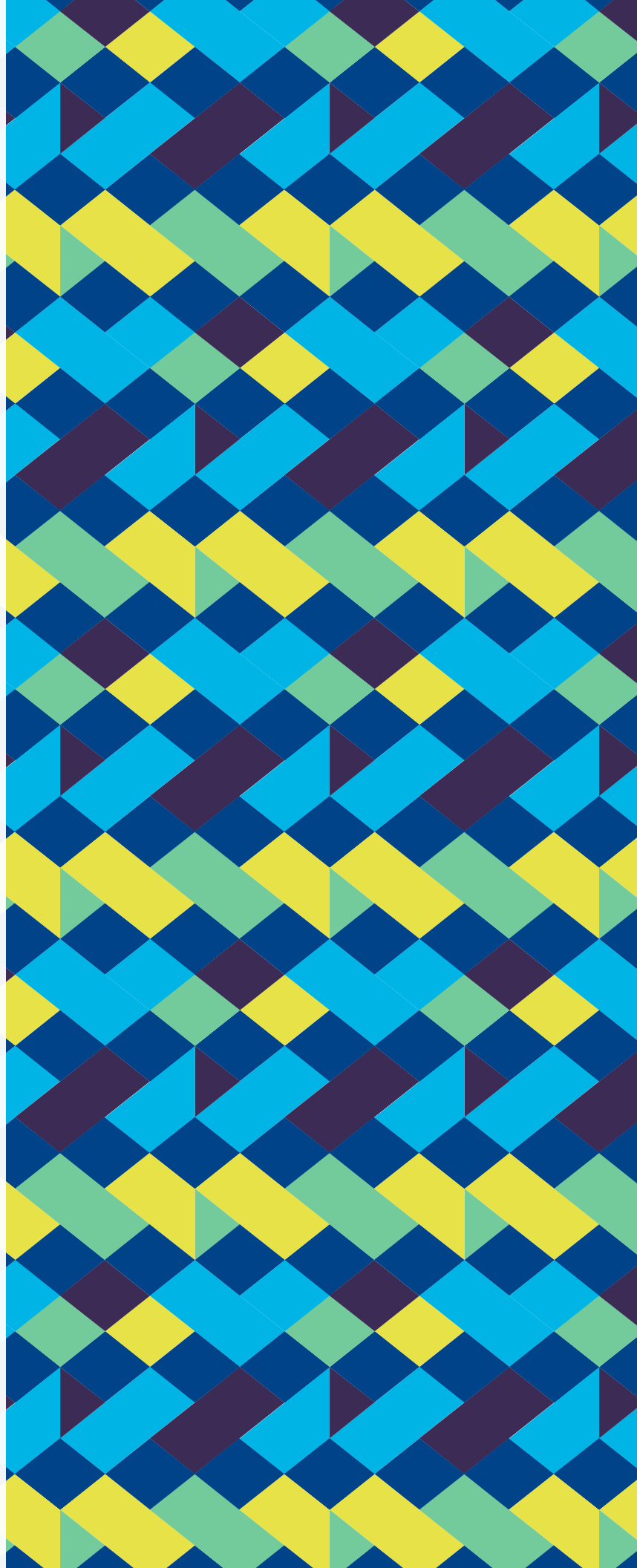
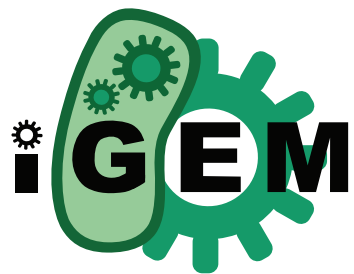


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**Annual Review**





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Annual Review



280

Teams

39

Countries

5000+

Participants

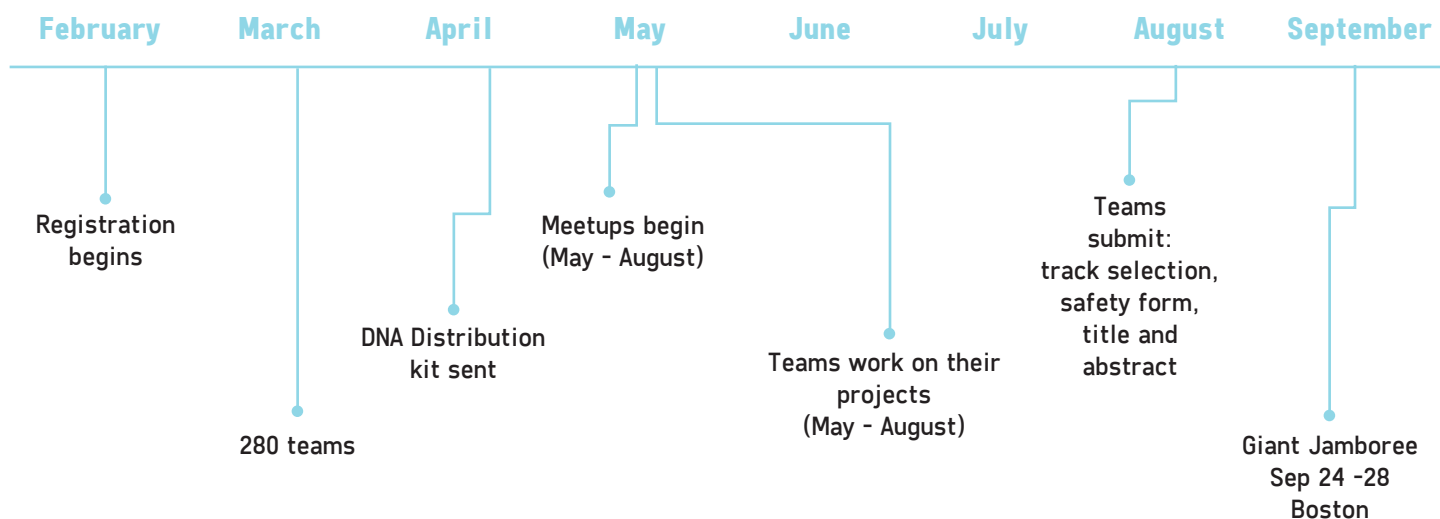
## iGEM

As we close out 2015, we would like to celebrate the work of the iGEM 2015 teams. Participating in iGEM is not easy — our goal is to make it worth it.

This review highlights many parts of iGEM that have come out of the team struggles and failures, their successes, and their accomplishments.



## 2015 Timeline



## Values

In iGEM, students are expected to be honest with their research, cooperate with one another, practice good sportsmanship, be respectful of their peers, and celebrate everyone's efforts.

The iGEM values are:

**Integrity**  
**Good Sportsmanship**  
**Respect**  
**Honesty**  
**Celebration**  
**Cooperation**  
**Effort**  
**Excellence**



## Facets

iGEM is a multifaceted program in which students can develop new skills. The different components of the competition not only make it a strong and thorough program but also allow students to be involved in education and outreach, new technologies, an international community, safe research practices, project design, and scientific responsibility.

**COMPETITION - EDUCATION - TEAMWORK - TECHNOLOGY -  
SAFETY & SECURITY - ENTREPRENEURSHIP -  
RESPONSIBILITY - COMMUNITY - SHARING**

## Changing Education

Encouraging STEM education, teamwork, and social responsibility, iGEM has introduced over 14,000 students to synthetic biology.



## Gender Diversity

During the 2015 Giant Jamboree, we decided to start a conversation about Gender Diversity in the iGEM community. First, we held a panel on Women in Science where we had an open discussion about the issues facing women in science today. Then, we discussed Gender Diversity through a Brainstorming Room with a broader focus in order to capture ideas for gender balance and diversity overall. As a result of these activities, we formed a Gender Diversity Working Group to analyze the results, discuss new topics, and to provide suggestions for improving the gender diversity in iGEM for 2016 and beyond.

## Gender breakdown for 2015 Judges





## Technology

iGEM teams want to have a positive impact on the world. Through their multidisciplinary projects, they have brought a variety of current and novel technologies to the community. iGEMers have developed new chassis organisms, created DIY solutions to lab equipment, and worked on the cutting edge of synbio with assembly methods, DNA synthesis and gene-editing technologies like CRISPR-Cas9.

## Synthesis

2015 was a big year for synthesis in iGEM. Thanks to IDT, each team was given 20kb of free DNA synthesis - that's 5.6 million bases! Over 175 teams took advantage of this generous offer to synthesize parts.

By focusing on the design and characterization of their systems instead of assembly, these teams experienced the future.

## Hardware

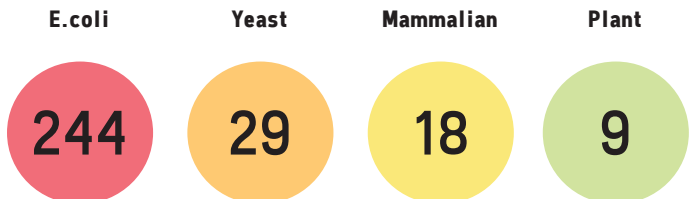
Seven teams participated in the new Hardware Track, but teams outside the track also worked on hardware components within their project. Teams used microfluidics, 3D printed prototypes, and microcomputers to build medical diagnostics, low cost lab robotics, and more.



## Chassis

Most iGEM teams work with *E. coli* as their primary chassis, but many teams have used other model organisms as well. 29 teams worked in Yeast, 18 teams worked in mammalian cell lines, and nine worked in plants. Some teams also sought to introduce new chassis such as *Synechocystis*, a cyanobacteria, for future iGEMers to use in their projects.

### Most commonly used Chassis by teams in 2015



### Most used Assembly Technology

62

Gibson

### Gene Edit/Regulation Technology

22

Teams that used CRISPR

## CRISPR-Cas

CRISPR-Cas has proven to be a powerful tool for the synthetic biology community as it offers greater control in gene editing and regulation, and its use has expanded within iGEM as well. 22 teams worked with CRISPR-Cas9 or dCas9 as part of their project. The applications were varied, including cancer therapy, food nutrition, and systems for GMO containment.

## DNA Assembly

While the majority of iGEMers use BioBrick assembly, many teams are also starting to work with other assembly methods, like Gibson and Golden Gate. As synthetic biology has matured, assembly technologies have made building devices easier and faster, in turn helping iGEM teams achieve a great deal in a season.

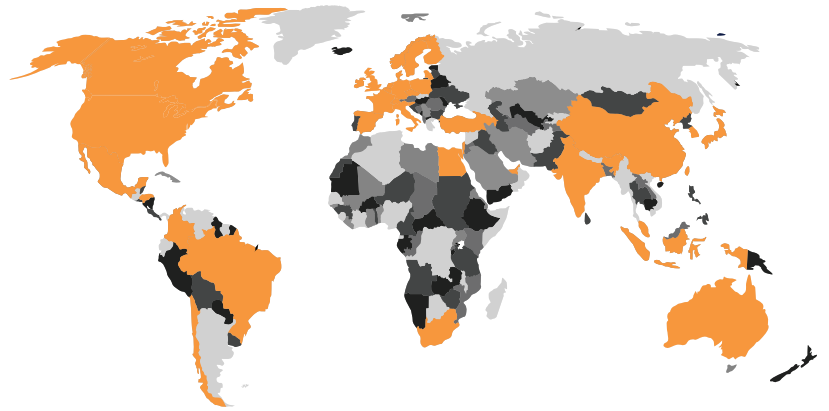


## Meetups

Teams embraced the iGEM spirit of community and gathered together at meetups across the world – from Sydney and Seoul to Sao Paulo and Fort Collins. Between April and September teams around the world hosted meetups to share ideas, help each other and have fun!

27

Meetups organized by teams



Countries Participating in 2015



## Safety

iGEM teams follow a high standard of safe and responsible biological engineering, considering both safety issues in the lab and risk assessment issues in the wider world. iGEM's safety program strengthened in 2015, as the scope of team projects continued to grow.

More teams are working with unusual organisms (beyond the usual lab workhorses, *E. coli* and yeast), encompassing both microorganisms and higher animals (especially insects and mice).

This year's Security Commendation was awarded to the Bielefeld-CeBiTec team for their excellent report on Dual Use research issues in synthetic biology.



## Fundraising

Teams raised a total of over:

14 Million

dollars across the world

## Human Practices

2015 was a stellar year for Human Practices, as iGEM teams continued to go beyond the call of duty in considering issues beyond the bench. For the first time, the "Best Human Practices" award was split into two categories: "Best Education & Public Engagement", and "Best Integrated Human Practices". This year's teams produced stellar educational materials, including lab manuals and school curricula on synthetic biology. They also excelled in integrating real-world considerations into their technical design, engaging with a wide variety of stakeholders and giving thought to practical, ethical, legal, and social issues.



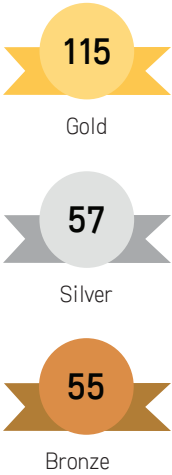
# Awards

In just one summer, students worked on projects ranging from non-toxic insect repellent to multi-purpose space moss, then presented their work and competed for awards at the five-day iGEM competition in Boston from September 24-28, 2015. The winning projects introduced to the world at the iGEM 2015 Giant Jamboree were remarkable, and iGEM is proud to recognize their hard work.

## Winners

	High School	Overgrad	Undergrad
Grand Prize Winner	TAS Taipei	TU Delft	William and Mary
1st Runner-Up		BGU Israel	Czech Republic
2nd Runner-Up			Heidelberg

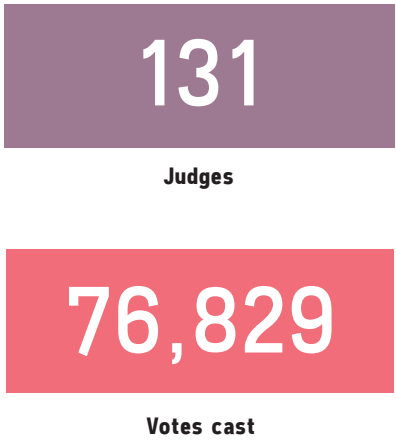
## Medals



## Teams by Track

3	Art & Design	18	Manufacturing
4	Community Labs	7	Measurement
13	Energy	31	New Application
33	Environment	8	Software
13	Food & Nutrition		
36	High School		
7	Hardware		
55	Health & Medicine		
21	Foundational Advance		
11	Information Processing		

## Judging



## Special Prizes and Nominations



"iGEM is no competition like any other one. It's not about competing against other teams to get the first prize. It's about bringing together all the creativity and hard work that students from all over the world have put into their project. It's about sharing ideas, whether they're big or small, and the fascination we have for synthetic biology."

Kwankwan Zhu  
Student, TU Eindhoven







"Having attended other leading high school science competitions with students, such as the 2015 Google Science Fair in California, BioGENEius competitions in 2014 and 2015 for biotech, JSHS in 2015, and recounting team student member experiences from ISEF, the iGEM experience was simply unparalleled. A forum that brings students from high school to over-graduate makes it unique; where there is an abundance of exceptional, creative, thoughtful research, exuberant students from across the world willing to share their work and work together with other teams, for its inherent collaborative spirit to genuinely advance a field that can have potential benefit to the world. iGEM offers an unsurpassed opportunity for those truly passionate about turning experiential learning into solving challenges together."

Nina Arendtsz  
Instructor, BroadRun - NorthernVA

**Get ready for 2016!**

**iGEM 2016 Giant Jamboree**  
**October 27-31, 2016**  
**Hynes Convention Center**  
**Boston, MA**



**Thank you, Sponsors**



**Thank you**

Thank you to the students and instructors. You are iGEM. Your effort, your creativity, and your commitment make your projects successful and make iGEM worth it.

The goal of Synthetic Biology is to establish fluent control over matter - a technological revolution of the 21st century. iGEM introduces students, faculty, and advisors to the field. It shows them the excitement and challenges, the opportunities and risks they will face in the future. iGEM is not just what the students did this summer. It is the beginning of what they will do for the rest of their lives.

